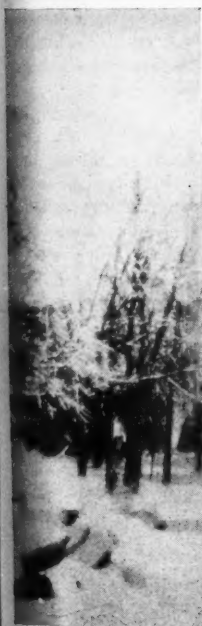


MILBANK MEMORIAL FUND
QUARTERLY BULLETIN
 NEW YORK HEALTH DEMONSTRATIONS
 Vol. VIII JANUARY 1930 No. 1

THE PREVALENCE *of* PHYSICAL
 IMPAIRMENTS *at* DIFFERENT AGES

*A Summary of a Recent Study made by the
 Research Division of the Milbank Memorial Fund*



A STATISTICAL analysis of over 100,000 records of medical examinations of native born adult males in the United States has just been completed by the Research Division of the Milbank Memorial Fund. This is by far the largest mass of records of medical examinations of this type that has ever been brought together in statistical form in this country, and probably in the world. These records have the advantage of having been collected according to a uniform procedure and may be said to represent a consensus of current medical opinion on the prevalence of impairments and chronic illness, since the examinations themselves were made by more than 9,000 physicians in different parts of the United

States. The data were made available by the Life Extension Institute, and the analysis was made with the assistance of Rollo H. Britten, of the United States Public Health Service, who is one of the authors of a government bulletin dealing with similar records for 10,000 industrial workers. A previous study of 17,000 examinations made by the Life Extension Institute in 1921 was made by Dublin, Fisk and Kopf.

The results of the present analysis have been summarized in a series of diagrams, some of which are reproduced here. A more complete report dealing with the nature of the data, the gross findings, and the changes in impairments of different kinds according to age, is being published in the January number of the *American Journal of Hygiene*.

The examinations of the Institute are of various kinds, some being more detailed than others. The records utilized in the present study are of examinations of life insurance policyholders at "head offices" (chiefly in New York, but some in Boston and Chicago) and in the "field." The examinations were of the periodic type: that is, the purpose of

NEW knowledge regarding the prevalence of physical impairments and of chronic diseases among native-born male adults in the United States has been divulged through study by the Fund's Research Division of the records of over 100,000 medical examinations made by the Life Extension Institute. This is by far the largest mass of records of medical examinations of this type that has ever been brought together in statistical form in this country, and probably in the world. What has been known of these conditions in the past has been more or less general in nature, much more satisfactory data being available as to the rates of mortality and of sickness at various ages. (The first article in this issue presents a summary of this study.

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the insurance companies in offering them was to encourage the policyholders to avail themselves of the benefits of periodic investigation of their physical condition. Only the first

examinations of policyholders who had taken advantage of these offers are included in this study. That is, these examinations were made after insurance had been granted. They should not be confused with those of applicants for insurance. For special phases of the investigation, which will be reported upon at a later date, the so-called "standard" examinations given to regular members of the Institute will also be utilized.

Data being considered at this time are limited

to approximately one hundred thousand white males, not foreign born. It was found that of these there were 4,438 agricultural workers; 14,489 professional; 15,755 executives and merchants; 21,326 salesmen; 13,642 clerks, including clerks in stores; 16,714 skilled trade, and 14,560 falling into miscellaneous occupational groupings. Thus the material has the defect of including a disproportionately small number of individuals in the lower economic and social levels. For this reason the impairment rates for most conditions must be

PHILANTHROPIC organizations and national banking interests have shared a common loss in the death of Chellis A. Austin, president of the Equitable Trust Company of New York, reported on page 17. For a number of years Mr. Austin, who was treasurer and member of the Board of Directors of the Milbank Memorial Fund, has been closely identified with many benevolent undertakings, giving a large part of his time and thought to these organizations. After twenty-five years of service, Edward W. Sheldon has resigned as president of the Fund and Albert G. Milbank has been elected as his successor. A resolution expressing the gratitude of the Fund's Board of Directors for Mr. Sheldon's services to the foundation, is recorded on later pages.

Summary of Impairments According to Age

GROUP	DECREASE WITH AGE	NO GENERAL TREND	SLIGHT RISE WITH AGE	MARKED RISE WITH AGE
Eye		Diseases of external eye or eyelid		Defective vision Eye ground changes Cataract
Ear	Otitis media	Wax in ears	Perforation of drum	Defective hearing, Practically total deafness
Nose and throat	Deflected septum Hypertrophic rhinitis Naso-pharyngitis Frequent colds Enlarged, diseased tonsils	Infection nasal sinus Atrophic rhinitis	Polyp, growths, ulcers Chronic laryngitis	Perforation of septum
Respiratory	Tuberculosis		Abnormal signs not suggestive of tuberculosis	Emphysema Asthma
Teeth		Slightly infected gums*		Pyorrhea Carious teeth
Heart				Enlarged heart Organic valvular Murmurs Intermittent pulse Functional murmur
Blood vessels and pressure		Rapid pulse Low blood pressure*		High blood pressure Arterial thickness
Varicose veins, etc.		Varicocele		Hemorrhoids Varicose veins
Stomach and abdominal	Tenderness region of appendix	Weak rings Ulcers of stomach Acid stomach Gastric disturb.*	Constipation Habitual use laxatives	Hernia Enlarged or hardening of liver Tenderness region gall bladder Gastroenterostomy, viscerostosis Hydrocele
Genito-urinary		Syphilitic lesions	Testicles hard, tender	Stricture urethra Enlarged prostate Frequent or painful urination Cystitis
Brain and nervous		Exaggerated reflexes	Ataxic gait	Sluggish reflexes (irregular, etc.) Positive Romberg
Endocrine	Enlarged thyroid Dys-function thyroid	Hyperthyroidism		
Urinalysis	Low specific gravity		Pus Sugar	Casts Albumin
Miscellaneous	Mastoids		Paralysis	Oedema Neuralgia, neuritis

* Reached high point in middle life.

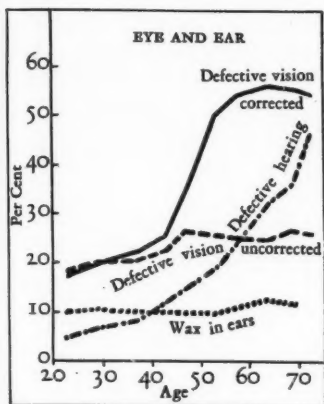


Fig. 1. The study verified the common impression that impaired hearing and vision become increasingly prevalent with advancing age.

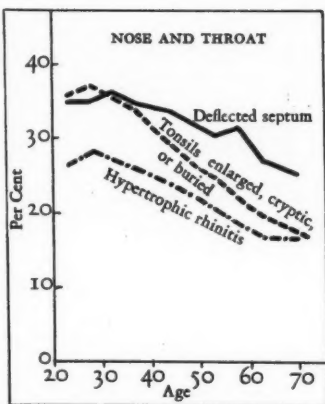


Fig. 2. Nose and throat defects, on the contrary, were found to be less and less prevalent among the men over twenty-five.

regarded as minimized rather than exaggerated.

Even within the same economic or social groups, it is difficult to state how far the individuals may be taken to be representative, for it is not possible to weigh exactly the factors involved in the unconscious selection which has determined the types of persons coming for examination. First, all had previously passed insurance examinations. Furthermore, it must be recognized that some persons accept this service to find out what is wrong with them because they know or think that something is wrong; others come because of a genuine interest in personal hygiene, which may be reflected in their good physical condition. Are the rates of impairment higher or lower than would be found in the general population? Until comparable data are obtained for a sample that is typical of the general population, this question cannot be answered. In the meantime, the data under consideration are, it is believed, the most representative of their kind and

Albumin
Oedema
Neuralgia, neuritis
Sugar
Paralysis

Mastoids
• Reaches high point in middle life.
Miscellaneous

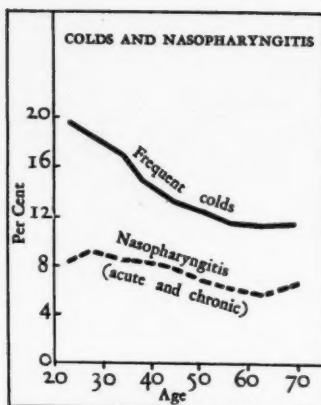


Fig. 3. Infections of the upper respiratory tract were reported as appearing less and less frequently in the advancing age groups.

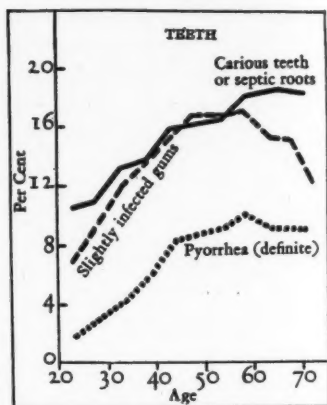


Fig. 4. Septic conditions of the teeth and gums showed a constant and marked increase among the men as age advanced.

constitute a definite advance upon what has heretofore been available.

The age distribution is unlike that of the general adult population, having a smaller proportion of young adults and of old men. Since, in the present discussion, we have chosen to consider particularly changes with age, this is not an important factor.

With the exception of urinalyses, which were all made in the Institute's laboratories, all the data for persons examined were recorded by the examining physicians upon a form prescribed and furnished by the Life Extension Institute. This form, together with explanatory terms and instructions, is given in a recent book by Fisk and Crawford entitled, "How to Make the Periodic Health Examination."

In the analysis of these data, the findings of the medical examiners working in the "field" have generally been kept separate from those in the "head office." Since the examiners working in the "head office" are a small group under close

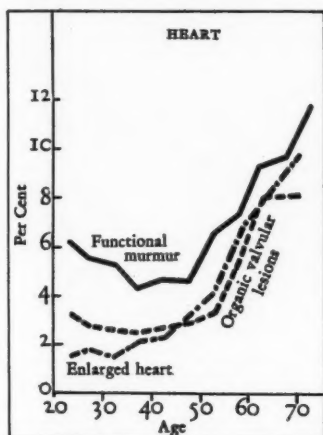


Fig. 5. Heart disease, involving the musculature, the heart linings and the valves, showed a marked rise after the age of forty-five.

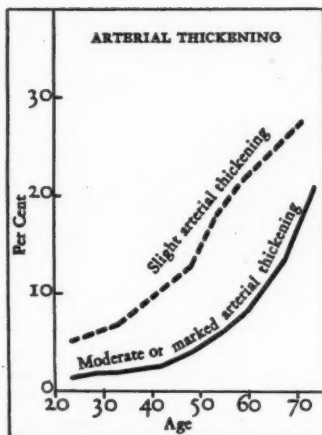


Fig. 6. Arterial thickening, manifesting itself earlier, followed the general trend of heart disease, becoming increasingly prevalent in later life.

supervision, it may be expected that their findings will differ from those of field physicians, who by reason of their much larger number have a diversity of training and of technique, and can receive very little supervision. As the results show, this expectation was fulfilled. Whether the findings of the former group or of the latter best represent the consensus of medical opinion as to the prevalence of certain impairments, may be open to some question. Greater emphasis may have been placed on some impairments by the "head office" personnel than by the physicians elsewhere. On the other hand, there may have been a tendency to overlook certain impairments in the "field" or to record only the more marked impairments. Where the findings coincide, as they frequently do, a certain amount of validity is added to the rates. In presenting the age curves it has been found more convenient to use the combined data, which will be weighted primarily by

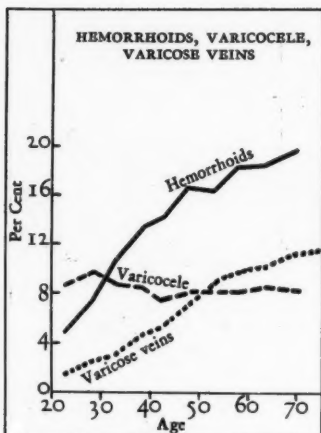


Fig. 7. Varicosities of the scrotal veins were more or less uniformly prevalent; hemorrhoids and varicose veins marked increase with age.

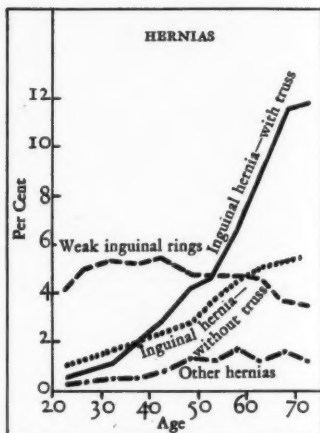


Fig. 8. The inquiry revealed that the use of the truss for inguinal hernia becomes more prevalent as age advances.

the "field" examinations (80 per cent), but it may be said that the separately derived curves are quite generally consistent.

The strictly confidential nature of the Institute's records was recognized at all times. The tabulations were made from impersonal punch cards on which only case numbers were used for identification. The codes which were devised to express in convenient statistical terms the data relating to the history, physical findings and results of supplementary laboratory investigations were set forth in detail in the publication of Fisk and Crawford. The instructions prepared by the Institute for use with the statistical codes include necessary interpretation of physical findings. These will be given in the detailed papers to be published in the *American Journal of Hygiene* and for lack of space cannot be reproduced here.

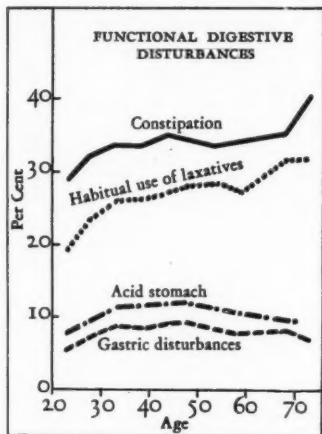


Fig. 9. Constipation and the habitual use of laxatives were found to be fairly prevalent at twenty and to increase concomitantly with age.

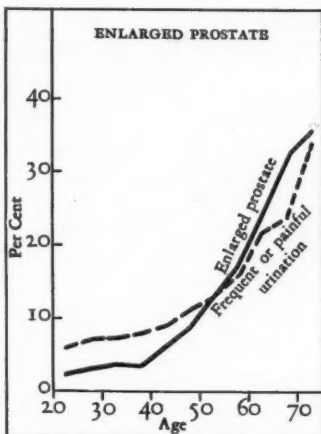


Fig. 10. Enlargement of the prostate, and frequent or painful urination, showed a marked rise in prevalence after the age of forty.

The statement that a certain percentage of persons have a given impairment—let us say, enlarged tonsils, arteriosclerosis, hernia—is more or less meaningless, even were it possible to discount all of the inherent defects in the data which have just been discussed. Most impairments begin as barely discernible differences from the normal and gradually extend until quite serious. How soon these deviations are to be regarded as pathological and therefore to be recorded is not determinable in the present state of our knowledge. Furthermore, in any record of impairments these slight conditions must as a rule be placed with more serious ones and outweigh them in the statistical record. Thus it has been felt that it is not the gross prevalence rates which are to be taken as of great importance in a study of this kind, but rather the various internal relationships, such as changes with age, relation to height and weight, differences by sex,

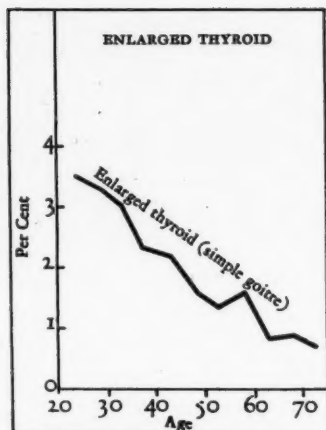


Fig. 11. Enlargement of the thyroid, comparatively rare in men, was found in less than 2 per cent of those over thirty-five.

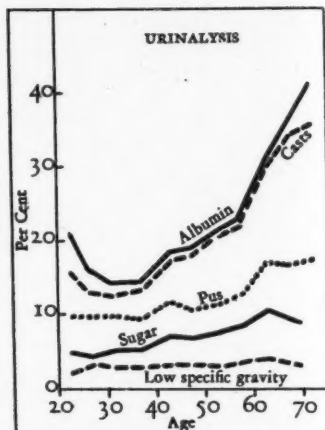


Fig. 12. Albumin and casts in the urine, found more prevalent at twenty than at forty, were reported increasingly thereafter with advancing age.

occupation, etc., and correlation of impairments. In this brief discussion, therefore, it has been felt well to omit any detailed consideration of the gross rates, and give attention to one of the other relationships—that of changes in the rate of prevalence at different ages. However, from the graphs one will be able, if he so desires, to estimate closely what the actual rates appear to be.

The prevalence of physical impairments and chronic diseases at various stages of adult life is a matter of great medical interest. What has been known of these conditions in the past has been more or less general in nature, the vagueness of such information being markedly evident in current medical textbooks. Much more satisfactory data are available as to the rates of mortality and of sickness at different ages, and the present study may be regarded as supplementary to such data. Preliminary statistics of the same character

have been given in the papers by Dublin, Fisk and Kopf already referred to, and for the general industrial population in one by Britten and Thompson.¹

There have been selected for reproduction here the age curves of a number of the most important impairments. It must not be forgotten that these curves provide a picture of the *relative* age prevalence of specific impairments in a group of the population which was able to come for a health examination. Since, in the older ages, it may be assumed that such a group will become relatively smaller, it is evident that there is a tendency to miss an increasing number of impairments at these ages. The curves would rise more rapidly were it possible to include impairments of disabled persons. Furthermore, if the degree of the impairment were calculable, one would again get a rather different picture, showing the increasing seriousness of impairments among older persons.

In examining the graphs, one must also keep in mind that, in appraising percentage changes from age to age on co-ordinate paper of this type (arithmetic scale), it is necessary to compare the length of ordinates, rather than the shape of the curve itself. Although, of course, a single scale has been used for any one graph, it has been requisite to use different scales for the various graphs in order to reproduce curves varying so greatly in magnitude.

Since only the major impairments could be reproduced graphically, it was felt desirable to present some sort of a summary which would give information also for the relatively infrequent impairments about which less is known as to age prevalence. These are presented in as detailed a form as possible in the complete papers. Here there is space only to give a summary in qualitative form (Table 1) from which

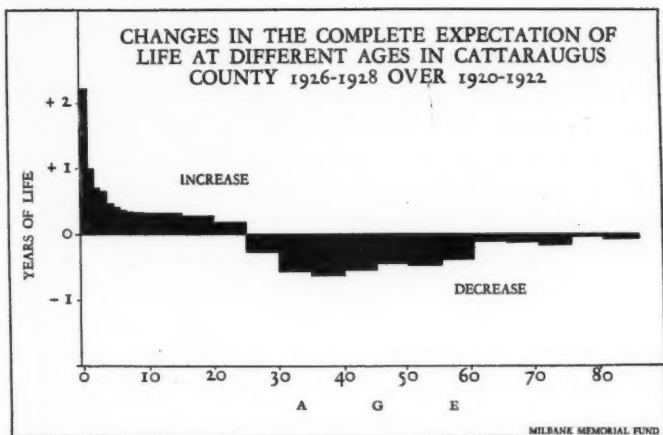
¹ United States Public Health Service—Public Health Bulletin No. 162.

one can see what impairments decrease with age, what ones show no general trend, what ones rise slightly with age, what ones rise markedly with age. There are also a few conditions which rise and then decline, as indicated with the asterisks.

The diseases showing a marked rise with age are clearly those of particular importance in any effort to meet the problem of degenerative diseases. In this connection, it is impressive that the curves reproduced in this paper for such conditions do not show as rapid a rise as is indicated by mortality statistics, suggesting an increasing fatality rate among older people.

Perhaps the most significant conclusion that we will derive from this table is the fact that the diseases which show a decrease with age are more or less of an infectious nature, while those which increase with age indicate an organic degeneration.





LIFE EXPECTANCY IN CATTARAUGUS COUNTY 1920-1922 and 1926-1928



THE complete expectation of life in Cattaraugus County was 59.79 years in 1926-1928 as against 57.57 in 1920-1922, gain of 2.22 years. This expression of the decline in the mortality rate has been arrived at by constructing life tables¹ for Cattaraugus County for the two periods indicated. It can be interpreted to mean that the average Cattaraugus baby at birth in 1926, 1927 or 1928

¹ The graphic method of graduation or interpolation for single years of life was used in constructing these life tables. The method is described in detail by Arthur Newsholme and T. H. C. Stevenson in "The Graphic Method of Constructing a Life Table Illustrated by the Brighton Life Table, 1891-1900," *Journal of Hygiene*, 1903, Vol. 3, p. 297. The population for the period 1920-1922 was based on the age distribution of Cattaraugus County population shown by the 1920 Federal Census and the population used for the period 1926-1928 was based on the State Census of 1925. The distribution under 5 years for both periods was based on births and deaths. A more recent but briefer description of the general method is contained in "A Note on the Graphic Method of Graduation in the Construction of Life Tables" by Hilda M. Woods, *The Lancet*, May 4, 1929, p. 941.

could expect to live about two and one quarter more years of life than it could have expected had it been born in 1920, 1921 or 1922. Another way of putting it would be to say that the 1,400 babies born annually in the latter period could look forward to over 3,000 more years of life than they could have anticipated had they been born in the earlier period.

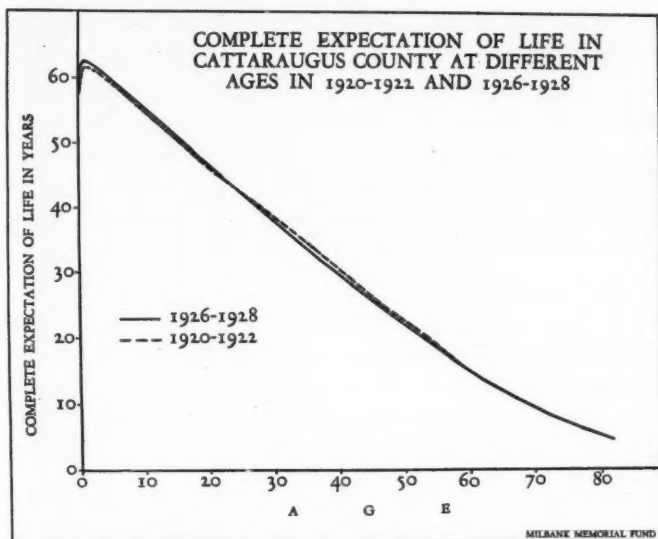
Similar "life table expressions," as they are termed, are not available for areas strictly comparable to Cattaraugus County, but it is interesting to note that although the complete expectancy of life at birth in Cattaraugus in 1920-1922 was about one-third of a year (0.38) less than that of the United States in 1921-1922, in 1926-1928 it was about one and one-third years (1.37) more than that of the United States in 1926-1927.² The expectancy of life at birth in the mortality registration area was a little less than 58 years in 1921-1922 and 58.4 years in 1926-1927. Thus the increase in life expectancy in Cattaraugus was nearly two years (1.75) greater than that in the United States during approximately the same period.

Complete expectation of life at various ages in Cattaraugus County for the period 1920-1922 and 1926-1928.

Age	Complete Expectation of Life	
	1920-1922	1926-1928
0	57.57	59.79
1	61.74	62.74
2	61.41	62.12
3	60.79	61.45
4	60.14	60.61
5	59.35	59.77
6	58.52	58.89
7	57.66	58.01
12	53.22	53.55
17	48.81	49.11
22	44.60	44.80
27	40.78	40.52
32	36.78	36.22
37	32.66	32.04
42	28.55	28.01
47	24.72	24.27
52	20.99	20.53
57	17.26	16.87
62	13.68	13.58
67	10.83	10.71
72	8.28	8.11
77	6.08	6.10
82	4.74	4.67

But in Cattaraugus, as in the country at large, this greater

² Death registration area. See *Statistical Bulletin* Metropolitan Life Insurance Company, February, 1929, X: 2.



Complete expectation of life at different ages in Cattaraugus County, 1920-1922 and 1926-1928.

expectancy of life by babies can not be shared by persons at middle age. If one could assume for Cattaraugus County that persons born in 1920-1922 will die exactly at the ages at which people were dying in those three years and if we could make a similar assumption for persons born in 1926-1928, then we would find that a larger proportion of the latter group actually would die after reaching the age of 25 years than the former. Of course this is an absurd assumption; and for this reason most "life table expressions," however useful they may be for actuarial calculations, are confusing and poorly suited for showing the mortality situation at a given time. To put it in plain language we must revert to the simple facts (1) that the death rate among persons 25 years of age and older in Cattaraugus County was higher, and (2) that the death rate among persons under 25 years of age was

lower, in 1926-1928 as compared with 1920-1922. This was particularly true of children and especially of babies. This is the reason why "the complete expectancy of life" at birth and at ages up to about 25 has increased, whereas in the older ages it has decreased as the accompanying diagrams and table show. As for the United States, the span of life as Dublin³ has so clearly pointed out, is not any longer than it was. In fact it is somewhat shorter. But the *expectation of life*, or the *mean length of life*, has been considerably increased, chiefly by reason of the reduction in the death rate of infants and children. This fact is clearly shown for Cattaraugus County.

³ Abstract of an address before the American Public Health Association, Minneapolis, October 3, 1929. *Statistical Bulletin*, Metropolitan Life Insurance Company, October, 1929. X:1.





NEWS DIGEST

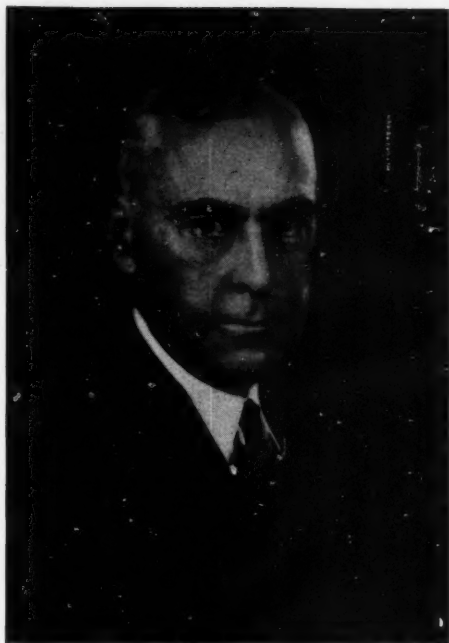
WHILE national banking interests mourn the loss of Chellis A. Austin, one of the financial leaders of the country, and president of the Equitable Trust Company of New York, who died suddenly of angina pectoris on December 13, 1929, social, educational and philanthropic organizations in New York City and elsewhere also lament the death of a friend.

Mr. Austin was an inspiring example of a man who ordered his ever broadening business interests and responsibilities in such a way as not to crowd out his concern for his fellow men. For a number of years Mr. Austin was closely identified with many philanthropic undertakings, and during the past six years his activities in this direction had become even more pronounced.

As treasurer and member of the Board of Directors of the Milbank Memorial Fund, as treasurer and trustee of the finance committee of Tuskegee

Normal and Industrial Institute, as president and director of the Bowling Green Neighborhood Association, as vice-president and trustee of the State Charities Aid Association, as treasurer and chairman of the finance committee of the China Medical Board, and as treasurer and director of the Welfare Council of New York City and of the Committee on the Cost of Medical Care, Mr. Austin's unique business talent, keen judgment and humanitarianism were continually being translated into social service.

Mr. Austin gave a large part of his time and thought to the organizations with which he became affiliated. When he was called upon for some service, few days were so crowded as to exclude completely his philanthropic interests from his thought. Social welfare frequently received as much heed from him as banking matters of great importance, and the same studied thought preceded the



Jay Te Winburn

CHELLIS A. AUSTIN

*Treasurer and Member of the Executive Committee of the Milbank Memorial Fund
June 17, 1876—December 13, 1929*

all embracing symbol of the spirit of humanity—"a temple to mark what has been achieved in human welfare, and to coordinate and unify the spirit and the services of those who strive for a better day." When at length this dreamed-of Temple of Humanity becomes a reality, it will stand, in part, at least, as a memorial to this man who so earnestly shared in that striving for a better day.

Whatever Mr. Austin's attainments and however they excite praise, it is the man himself who will live in the memory

advice he gave to the philanthropic organizations with which his name was associated as that which preceded his banking decisions.

During the past several years, as treasurer of the Welfare Council of New York City, Mr. Austin participated in the plans of that organization to provide in New York City an adequate,

of his associates in business and in philanthropy. Through the courtesy of the Equitable Trust Company, we quote an extract from a minute adopted as a tribute to Mr. Austin by its Board of Trustees at a meeting held on December 17, 1929:

"He was possessed of a mind that illuminated every subject with which it dealt; a mind

that never rested until it had penetrated into the very heart of the problem; a mind that scorned subtlety and reached its conclusions by straight and honest thinking.

"He was endowed with a heart that overflowed with human sympathy; a heart that responded generously to the needs of those who appealed to him for counsel or for help; a heart that never allowed him to spare himself but ever urged him on to unselfish service.

"He had a friendly and lovable nature and, in consequence, his life was rich with the blessings that flow from human companionship.

"A keen sense of humor radiated his outlook on life and served as a balance to that intense earnestness which was one of the secrets of his power.

"Quick to assert or defend the right he trained himself to be tolerant of the views of others, but once the issue was clearly drawn he was ready to fight to the end for his convictions.

"Wise in his judgments; courageous in his actions; faithful to his creed; loyal in his friendships; tender in his

sympathy; joyous in his spirit—a gallant gentleman.

"Such was the man whose image we will carry in our hearts."



AFTER twenty-five years of service, Edward W. Sheldon has resigned as president of the Milbank Memorial Fund, although continuing to serve as a member of the Fund's Board of Directors, and of its Executive Committee. Elihu Root presented a resolution commending Mr. Sheldon's philanthropic service at the meeting of the foundation's directors at which Albert G. Milbank was elected to the office.

"As an intimate friend and adviser of Elizabeth Milbank Anderson, who established the Milbank Memorial Fund on April 3, 1905," the resolution read, "Mr. Sheldon gave his discerning insight, sagacious judgment and broad experience in philanthropy to the incorporation of the foundation and subsequently to its guidance in discharging the trust imposed upon it, namely, 'to improve the physical, mental and moral condition of humanity and generally to advance charitable and benevolent objects.'



EDWARD WRIGHT SHELDON *Peter Juley*
who recently resigned as President of the Mil-
bank Memorial Fund after twenty-five years
of service

"Under Mr. Sheldon's leadership the Fund has become an effective force in furthering the welfare of humanity. Grants of \$9,524,058.82 have enabled it to cooperate in several large undertakings and in a host of smaller activities in the general fields of medical science and public health practice, of social welfare and of general education.

"Its establishment and continued support of the Social Welfare Department of the Association for Improving the Condition of the Poor," the statement continued, "have enabled the Association to undertake preventive and constructive work for the community as a whole, apart from its service to particular families. Financial assistance given to the Association's Home Hospital helped to successfully demonstrate

the practicability of family care of tuberculosis. The Fund's

support has enabled the New York Commission on Ventilation to acquire knowledge regarding the ventilation of schools and other buildings which affects the health not only of school children but of all who work indoors, and which has saved millions of dollars in school construction. Through aid of the Mulberry, East Harlem and Judson health

centers, the Fund has helped to improve the health and living conditions of individuals and families resident in the more congested districts of New York City. By devoting a substantial part of its income to enable certain communities to utilize more completely and intensively available experience and knowledge concerning the prevention and control of disease and the promotion of hygiene, the Fund has participated prominently in the New York Health Demonstrations, an outstanding contemporary endeavor to forward public health administration and to advance the general health knowledge of the public.

"During the years of these and the many other activities of the Milbank Memorial Fund, Mr. Sheldon has given generously of his time and energy to the foundation, and by his vision, steadfastness of purpose and leadership

has made its work effective and its influence extend from one end of the earth to the other. While his resignation of the presidency is accepted with reluctance and with deep regret, Mr. Sheldon's continuing membership on the Board of Directors and on its Executive Committee is a source of pleasure and gratitude to his fellow trustees, who are thus assured

ALBERT GOODSSELL MILBANK
*who, following Mr. Sheldon's resignation, was
elected President of the Milbank
Memorial Fund* Pirie MacDonald



of the abiding inspiration of his personality and of his devotion to the trust of the founder."

Mr. Sheldon, who is chairman of the Board of Trustees of the United States Trust Company, was the first president of the Milbank Memorial Fund and has been a member of its governing board since its origin. He has given a great deal of his time to public service. He is governor and president of the Societies of the New York and of the Lying-In Hospitals, trustee and treasurer of the New York Public Library, chairman of the Joint Administrative Board of the New York Hospital-Cornell Medical College Association, and trustee of Princeton University, of Barnard College, and of the Webb Institute of Naval Architecture. Pressure of these and of important interests in the financial world is the reason of Mr. Sheldon's resignation.

Albert G. Milbank, who succeeds Mr. Sheldon, is a member of the law firm of Masten and Nichols, chairman of the Board of Directors of The Borden Company, a mem-

ber of the boards of trustee of the Equitable Trust Company, of New York and of the Title Guarantee and Trust Company, life trustee of Princeton University, trustee of Barnard College, and a member of the Board of Managers of the New York Association for Improving the Condition of the Poor.



The Milbank Memorial Fund has reprinted the following two papers presented last March at the Fourth New York Health Conference: "The Effect of the Public Health Program Upon the Interests of the Private Physician," by Dr. James Alexander Miller (published in the New York State Journal of Medicine, May 15, 1929), and "The Influence of Research in Bringing into Closer Relationship the Practice of Medicine and Public Health Activities," by Dr. Theobald Smith (published in the American Journal of Medical Sciences. 1929).

Copies of these reprints may be had upon request to the Fund, 49 Wall Street.



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